Horváth (1961) has discussed some plumage abnormalities of the Bullfinch. He found a small number of reddish feathers present on the black crown in many of his variant individuals. He regarded the presence of such feathers as a reversionary character of genetic origin indicating the phylogeny of the species. If, however, the red pigment is present at all times, then the presence of red feathers on the crown may be of no more significance than the presence of odd white feathers which occur at times in individuals of many species. They are more likely to indicate a temporary or permanent failure of a particular feather follicle to produce adequate melanin than to suggest a reversionary aberration arising from a recessive gene and producing phenotypic plumage characters of another related species.

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Weights of the Pennant-winged Nightjar

by P. L. Britton

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Between March 1966 and December 1967, the writer and his wife obtained a total of 184 weights of Pennant-winged Nightjar *Macrodipteryx vexillarius* in the Balovale District of north-western Zambia. A further six weights obtained by Dr. Robert B. Payne near Solwezi, also in north-western Zambia, in September 1966 are included. In Zambia, nightjars (largely adult male *Macrodipteryx*) are frequently abundant on gravel roads through *Brachystegia* woodland during the period September-March, and all the weights discussed here were obtained from such birds; either dazzled and caught for ringing or recently killed by a vehicle. Since birds were only abundant on roads on light nights with more than three-quarter moon, and at dawn and dusk, a dazzling technique was not very efficient and I have relied heavily on weights from those dead birds that were little damaged. Many of these birds were dissected so that stomach contents could be weighed and gonad activity and visible fat deposits noted. All weights were taken with spring balances; body weights to the nearest 0.5 gm. and weights of stomach contents to the nearest 0.1 gm. Wing lengths were noted in many cases, though these data are largely ignored in this paper (for Zambian measurements of this species see Tree 1967).

Largely as a result of severe petrol rationing, the quantity of data collected is far less than originally hoped, with samples in some cases very small. However, as it is unlikely that any further reasonable number of *Macrodipteryx* weights will be obtained in the near future, the results are worthy of presentation. Most weights are summarized in the Table.

Seasonal weight variation. 175 weights for August-December averaged 68.4 ± 5.0 gm. compared with 15 March weights which averaged 76.1 ± 9.0 gm. A comparison of the means for these two periods indicates that the difference between them is statistically significant. A *t*-test was used ($P < 0.01$). This species is wholly migratory in Zambia, being present only from mid-August to mid-March, and the March birds weighed (on 5th and 6th March)

were in fact the last birds seen that season. They would, therefore, be expected to be heavy prior to a lengthy migration, for, in addition to the evidence for palaearctic species (for example Smith 1966). Fry (1967) has shown that the intratropical African migrant *Merops albicollis* lays down a substantial store of fat prior to migration. Unfortunately, no March birds were inspected for fat deposits.

Of all birds weighed, the only ones weighing over 82.5 gm. were six in March, five of these being on 6th March. Further, the difference in the mean weights for 5th March (71.7 gm.) and 6th March (81.3 gm.) indicates an increase of 15% in the average weight of the population from the first date to the second, though samples are small. A *t*-test was used ($P<0.02$), and if the same test is used on only the six definite females of 5th March and the four definite females (including one recapture) of 6th March, the difference is equally significant. A female weighing 69.0 gm. at 2300 hrs. on 5th March had increased in weight by 3.0 gm. by 2130 hrs. the next day. This bird probably gives a more realistic estimate of the actual increase in weight between the first date and the second, as a 15% increase in weight is unlikely during such a short interval.

Sexual weight differences. Fourteen adult females weighed in September ranged from 67.0 to 82.5 gm., average 77.1 ± 5.8 gm. compared with 104 adult males weighed in September which ranged from 59.0 to 79.0 gm., average 67.7 ± 4.4 gm. The considerable difference between these mean values is statistically very significant. A *t*-test was used ($P<0.001$). Adult females are, therefore, quite obviously heavier than adult males in September, presumably because of the well known weight increase in female birds prior to egg-laying (Nice 1938). The majority of eggs would be laid in October (Benson, Brooke & Vernon 1964) and, of two females dissected in September, one had the ovary and oviduct considerably enlarged. I was unable to obtain any definite adult female weights for any other period, though the weights of six females (at least four of them definitely non-adult) obtained in November-December ranged from 57.0 to 75.0 gm., average 67.5 ± 5.8 gm., indicating that female weights are more similar to male weights at other times. Young birds are, however, often lighter than adults caught at the same time (see, for example, Baldwin & Kendeigh 1938), though this is not necessarily the case with this species.

Males are far larger than females if size is judged by wing length. 86 adult male wing lengths (excluding nuptial pennants) ranged from 198 to 242 mm., average 222.0 ± 8.4 mm., compared with 13 adult female wing lengths which ranged from 188 to 205 mm., average 194.4 ± 6.1 mm. There is no significant positive correlation between body weight and wing length for either males (86 birds) or females (13 birds).

Quantitative analysis of stomach contents. The contents of 44 stomachs were weighed in the period September-December, 1967. Most of the birds concerned were killed between 1900 and 2200 hrs., yet the weights of their stomach contents ranged from 0.1 to 15.0 gm., average 4.54 ± 3.90 gm.; individual food items normally weigh between 0.5 and 3.0 gm. It is quite obvious from the extremely large range and standard deviation in the weight of stomach contents that the amount of food in the stomach is very variable and such extreme variation is apparent in the weights of a series of stomach contents taken in any one hour. Moreover, some birds killed within 20 minutes of darkness had fairly full stomachs whereas one killed at 0500 hrs. had an almost empty stomach.

The contents of nine adult male stomachs were weighed in September and the contents of eleven male adult stomachs were weighed in October. September stomach weights averaged 5.9 ± 4.7 gm. whereas October stomach weights averaged 2.0 ± 1.79 gm. The difference between these two means is statistically significant. A *t*-test was used ($P < 0.05$). The mean body weight of adult males in October is a little less than the mean for September but this difference is not significant, even at the 0.1 level (using a *t*-test).

I was motivated to a study of stomach contents amounts by the suggestion (pers. comm.) of Dr. Robert B. Payne that the considerable weight variation in a small sample of adult males of this species which he obtained near Solwezi in September 1966 might be, to some extent, the result of the very variable amounts in the birds' stomachs. I know of no quantitative estimates made (for example a study of the weights of stomach contents) in an effort to establish a correlation between body weight and the amount of food in the stomach.

As September stomachs were heavier than October stomachs in adult males, as discussed above, any correlation is obscured if all twenty weights are considered together. However, when these weights are grouped more homogeneously, separating September and October birds, the positive correlation between body weight and weight of stomach contents is significant in both groups ($P < 0.05$).

Visible fat deposits. Between 50 and 60% of September-December birds had visible fat deposits on dissection. Amounts were small, but exceeded 0.4 gm. weight in 12% of birds, maximum 0.8 gm. No March birds were examined for visible fat deposits.

TABLE

Weights in gm. of the Pennant-winged Nightjar *Macrodipteryx vexillarius* in north-western Zambia in the period March 1966—December 1967. Adult male weights (a) are given on dates when at least five were weighed. Other weights are grouped as homogeneously as possible.

Date	*Total Weighed*	*Average Weight (gm.)*	*Weight Range (gm.)*	*S.D.*
		(*a*) Adult Males		
1966				
September 27th	18	67.9	62.0–75.0	4.6
28th	6	67.8	60.5–75.0	5.6
1967				
September 12th	8	68.4	63.0–78.5	4.2
13th	8	65.6	59.0–74.5	5.8
15th	14	67.6	63.5–73.0	3.4
16th	17	67.8	61.0–79.0	4.1
17th	11	67.6	59.5–73.5	4.5
20th	5	68.0	65.5–71.0	3.2
October 11th	10	65.2	60.5–72.0	3.2
		(*b*) Adult Females		
September 1967	14	77.1	67.0–82.5	5.8
		(*c*) Females		
1966				
March 5th	6	70.2	65.0–78.0	5.8
6th	4	81.5	72.0–88.0	5.9
		(*d*) Young Birds, Largely Unsexed		
Nov./Dec. 1967	27	68.3	57.0–79.5	4.3
		(*e*) Others		
1966				
March 5th	3	74.7	61.0–86.0	—
6th	3	81.0	69.0–88.0	—
1967				
Nov./Dec.	17	71.7	62.0–82.0	5.5

SUMMARY

A total of 190 Pennant-winged Nightjar *Macrodipteryx vexillarius* weights were obtained in north-western Zambia between March 1966 and December 1967. Birds weighed in March were heavier than birds weighed at other times, presumably as a result of increased fat deposits prior to migration.

Females were heavier than males in September (the period prior to egg-laying), though a sexual difference in weight is probably slight at other times; male wings are very much longer than female wings.

The contents of 44 stomachs were weighed in the period September-December 1967. The amount of food in the stomach is extremely variable (0.1–15.0 gm.). Adult males obtained in October had less food in their stomachs than those in September, though the reason for this is not known. There is positive correlation between body weight and weight of stomach contents if September and October birds are considered separately.

Birds dissected in September-December had little visible fat deposit; no March birds were dissected.

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The white-eye *Zosterops maderaspatana* (Linn.) of Menai Island, Cosmoledo Atoll

by C. W. Benson

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Since the comprehensive review of variation in the western Zosteropidae by Moreau (1957), there has been further collecting on some islands in the western Indian Ocean, leading to a fuller understanding of variation in this family in these particular areas: see Benson (1960: 88–91), who studied the Comoro forms, and Storer & Gill (1966), *Z. borbonica* (Gmelin) in Réunion and Mauritius.

I spent most of January to March 1968 on the Aldabra Atoll, during Phase III of the Royal Society Aldabra Expedition. I was also able to make brief visits to certain neighbouring islands—Astove on 5th March and the Cosmoledo complex the following day. For descriptions of these and other